

## **REMARKS**

### **Status of the Claims**

Claims 1, 3, 4 and 6-20 are pending in the present application. Claims 1 and 4 are independent.

Reconsideration of this application, in view of the discussion below, is respectfully requested.

### **Examiner Interview**

Applicants wish to thank the Examiner for the courtesies extended to Applicants' representative during the personal interview which was conducted on May 26, 2011. An Examiner Interview Summary was mailed June 2, 2011. Applicants' representative finds the Examiner's narrative of the interview of May 26, 2011, to be an accurate reflection of the Substance of the Interview.

### **Rejection under 35 U.S.C. § 103(a)**

Claims 1, 3, 4 and 6-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Silkeberg et al., U.S. Patent No. 6,033,706 (hereinafter "Silkeberg") in view of Bailey's Industrial Oil and Fat Products, 5<sup>th</sup> Edition, Hui, Y.H., ed., Vol. 4, 1996, page 201 (hereinafter "Hui") and Bailey's Industrial Oil and Fat Products, 4<sup>th</sup> Edition, Swern, D., ed., Vol. 2, 1982, pages 294-295 and 303 (hereinafter "Swern") and further in view Beroza and Kinman, "Sesamin, sesamol, and sesamol content of the oil of sesame seed as affected by strain, location grown, ageing, and frost damage," JAOCS, Vol. 32, No. 6, June, 1955, pages 348-350 (hereinafter "Beroza") and Hemalatha and Ghafoorunissa, "Lignans and tocopherols in Indian sesame cultivars," JAOC, Vol. 81, No. 5, pages 467-470 (hereinafter "Hemalatha"). This rejection is respectfully traversed.

At page 3 of the Office Action, it is alleged that the claimed invention differs from the teaching of Silkeberg in the recitation of the bleaching temperature used in the process and Hui is relied on as teaching that "there is no critical bleaching temperature for optimum bleaching results (paragraph 3, page 201). It is further asserted in the Office Action that "Hui also indicates that lower temperatures of 75-85C are recommended for some activated earths" and that "[i]t would

have been obvious to one of ordinary skill in the art to lower the bleaching temperature of Silkeberg according to [Hui to] optimize the treatment results.” Applicants respectfully disagree with the characterization of the teachings of Silkeberg in the Office Action and that one of ordinary skill in the art would have been motivated to modify Silkeberg’s teachings with the teachings of Hui as suggested in the Office Action. In fact, Silkeberg teaches away from the methods and method steps taught by Hui.

The characterization of the teachings of Silkeberg are found at pages 2-3 of the Office Action and are as follows:

...the seeds are bleached by a dedicated bleaching process that acts to precursor antioxidants in the oil. At column 6, lines 13-31, bleaching is accomplished by including 0.05-0.2% activated carbon and 0.1-1% acid bleaching clay. The treatment conditions are at about 95-100C and at 5-20 mbar for 20-30 minutes.

Silkeberg’s “dedicated” refining process is generally defined at col. 2, lines 44-50, as follows:

The present invention provides, *inter alia*, refining processes that retain maximum antioxidative power in the refined oil. The refining processes of the invention may be said to be "dedicated" refining processes and the refined oil may be said to be "dedicated" because the refining processes of the invention are dedicated to the purpose of maximizing the retention of antioxidative power during the refining.

Silkeberg goes on to detail the differences between his “dedicated” refining process for maximizing the antioxidants in oil to conventional refining processes. Silkeberg describes the “dedicated” bleaching step of his “dedicated” refining process at col. 5, line 65 to col. 6, line 13:

In the "dedicated" bleaching process about 0.1% to about 2%, by weight, amorphous silica gel, based on the weight of the oil, and about 0.005 to about 0.02% citric acid, by weight, based on the weight of the oil, are added to the oil heated to a temperature of about 50 to about 90°C and the thusly heated mixture of the oil with the amorphous silica gel and the citric acid is retained under vacuum, preferably a pressure of about 10 to about 20 mbar, for about 15 to about 30 minutes. This treatment eliminates or minimizes the usual treatment with bleaching earth. The purpose is to remove traces of soap, phospholipids and trace metals. If necessary, some minor quantities of bleaching earth might be added to remove color components and peroxide decomposition products...

Silkeberg explains at col. 6, lines 24-31, that his “dedicated” bleaching “bring[s] about relatively little change or only desirable alterations in the antioxidant precursors and the related antioxidants. This is contrary to a total or almost total loss of a valuable component such as sesamolin in traditional refining.”

The bleaching conditions cited in the Office Action at col. 6, lines 13-31 involving 0.05-0.2% activated carbon, 0.1-1% acid bleaching clay, heating to 95-100°C at a pressure of 5-20 mbar for 20-30 minutes are not directed to Silkeberg’s “dedicated” bleaching step, but rather to an optional conventional beaching step. Thus, col. 6, lines 13-23 of Silkeberg read as follows:

Optionally, if additional bleaching seems necessary, a mixture of about 0.05 to about 0.2%, by weight, activated carbon, based on the weight of the oil, and about 0.1 to about 1% weakly acid bleaching clay (pH preferably about 5 to about 7), based on the weight of the oil, is added to the oil heated to a temperature of about 95 to about 100°C and the thusly heated mixture of the oil with the activated carbon and weakly acid bleaching clay is retained under vacuum, preferably a pressure of about 5 to about 20 mbar, for about 20 to about 50 minutes. (emphasis added)

This optional bleaching step is a conventional bleaching step, and this would be apparent to one of ordinary skill in the art in view of Silkeberg’s teaching at col. 4, lines 11-24 that

The primary object of bleaching of the neutral oil is to remove major portions of colored substances present. Traditionally, alkaline or acid natural clays have been used; recently, acid-activated clays are most common...Normal bleaching conditions can be 0.5 to 2% by weight activated bleaching earth, based on the weight of the oil, the temperature 90° to 110°C, contact time 15 to 30 minutes and pressure 20-50 mbar. (emphasis added)

These are the same conditions cited in the Office Action, and “0.5 to 2% by weight activated bleaching earth, based on the weight of the oil, the temperature 90° to 110°C, contact time 15 to 30 minutes and pressure 20-50 mbar” are conditions used for conventional methods.

Thus, the conditions cited in the Office Action are for a normal bleaching step that may optionally be added after Silkeberg’s “dedicated” bleaching, when “additional bleaching seems necessary” after the “dedicated” bleaching step.

Further, Silkeberg’s “dedicated” bleaching is described at col. 5, line 65 to col. 6, line 13, as follows:

In the "dedicated" bleaching process about 0.1% to about 2%, by weight, amorphous silica gel, based on the weight of the oil, and about 0.005 to about 0.02% citric acid, by weight, based on the weight of the oil, are added to the oil heated to a temperature of about 50 to about 90°C and the thusly heated mixture of the oil with the amorphous silica gel and the citric acid is retained under vacuum, preferably a pressure of about 10 to about 20 mbar, for about 15 to about 30 minutes. This treatment eliminates or minimizes the usual treatment with bleaching earth. The purpose is to remove traces of soap, phospholipids and trace metals. If necessary, some minor quantities of bleaching earth might be added to remove color components and peroxide decomposition products. The oil is then fast filtered to separate it from solids and cooled under an inert atmosphere, typically nitrogen. (emphasis added)

Silkeberg discloses that his "dedicated" bleaching eliminates or minimizes the use of bleaching earth, relying instead on silica gel and citric acid for bleaching. Thus, Silkeberg teaches away from the use of clay or activated carbon (*e.g.*, bleaching earth, col. 4, ll. 14-16), as in the claimed invention.

Further, Silkeberg discloses his "dedicated" refining process in terms of how it is distinguished/modified from conventional methods. As explained above, Silkeberg's "dedicated" bleaching is directed to bringing about relatively little change or only desirable alterations in the antioxidant precursors and the related antioxidants, and this is contrary to a total or almost total loss of a valuable component such as sesamol in traditional refining.

As discussed above, Hui is relied on as teaching that "there is no critical bleaching temperature for optimum bleaching results (paragraph 3, page 201)" and that "Hui indicates that lower temperatures of 75-85C are recommended for some activated earths." At page 4 of the Office Action, it is alleged that it would have been obvious to one of ordinary skill in the art to lower the bleaching temperature of Silkeberg according to Hui to optimize the treatment results.

At col. 3, ll. 36-39, Silkeberg cites Hui (Bailey's Industrial Oil and Fat Products, 5<sup>th</sup> Edition, Hui, Y.H., ed., Vol. 4, 1996, Chapters 3 and 6) as disclosing "state-of-the-art" processes for both chemical and physical refining. Silkeberg characterizes the traditional/conventional refining methods as taught by Hui as resulting in "a great loss of antioxidants and antioxidant precursors." Also, Silkeberg teaches at col. 5, ll. 50-55, that "[d]uring traditional bleaching of sesame oil, essentially all the sesamol remaining at that point is converted into antioxidants, namely, sesamol, sesaminol and epi-sesaminol. This conversion of antioxidant precursors to

antioxidants has in the prior art been regarded as an advantage. The present invention is to the contrary.”

Further, Silkeberg discloses his invention in terms of “modifications of the traditional refining process to effect the ‘dedicated’ refining process” (col. 4, ll. 48-50), which is “dedicated” to the purpose of maximizing the retention of antioxidative power during refining (col. 2, ll. 46-50). Thus, Silkeberg teaches away from conventional refining methods as taught by Hui, and the refining processes taught by Silkeberg have been optimized/maximized over conventional methods, as taught by Hui. One of ordinary skill in the art would not have been motivated to modify Silkeberg’s methods with conditions taught by Hui, as Silkeberg teaches that his methods have been optimized/maximized over conventional methods like those taught by Hui. Further, the other secondary references do not cure these contrary teachings.

In view of the discussion above, Applicants respectfully request that the rejection of claims 1, 3, 4 and 6-20 under 35 U.S.C. § 103(a) be withdrawn.

### **CONCLUSION**

All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicants therefore respectfully request that the Examiner reconsider all presently outstanding rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Stephanie A. Wardwell, PhD, Registration No. 48,025, at the telephone number of the undersigned below to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Director is hereby authorized to charge any fees required during the pendency of the above-identified application or credit any overpayment to Deposit Account No. 02-2448.

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Respectfully submitted,

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